diation, whence are derived the following probabilities of a temperature deviation of the same sign as the deviation of the pressure gradient.

TABLE 14.

Sign.	East side.		West side.					Between the ranges.			
	Abashiri.	Tokyo.	Sapporo.	Suttu.	Akita.	Yamagata.	Niigata.	Kamikawa.	Hakodate.	Aomori.	Hukusima.
Same	16	13	12	14	12	13	13	13	13	14	11
Opposite	3	6	5	2	6	6	5	5	5	5	6
Intermediate	1	1	3	4	2	1	2	2	2	1	3
No. of cases	20	20	20	20	20	20	20	20	20	20	20
Probability of the same sign (%)	80	65	60	70	60	65	65	65	65	70	55
Probability (corrected) (%)	80.5	65.5	67.5	80.0	70.0	67.5	70.0	70.0	70.0	72.5	62.5

III. DURATION OF BRIGHT SUNSHINE.

5. *Correlation between the barometric gradient at Zikawei for March and the duration of bright sunshine in northeastern Japan in July.*—The anomaly of the duration of bright sunshine at any station is often due to a local cause. Yet I have ventured to examine whether the correlation between sunshine duration and the general barometric distribution exists or not. In the following Table 15 we give the [deviation in] the duration of bright sunshine at the meteorological stations in northeastern Japan. At these stations the bright sunshine is recorded by Jordan's heliograph.

TABLE 15.—*Deviation of sunshine duration (per cent).*

Year.	Barometric gradient, Zikawei.	July.			August.		
		Nemuro.	Tokyo.	Niigata.	Nemuro.	Tokyo.	Niigata.
1891	+0.24	0	− 8	.....	0	+ 2	.....
1892	+1.89	+ 9	+ 6	+ 6	+ 6	+ 6	+13
1893	−0.61	− 3	+21	+ 7	+ 8	+ 1	+ 7
1894	+0.34	+ 5	+22	+ 8	0	+ 8	+18
1895	−1.16	+ 7	−11	+ 8	− 1	− 3	0
1896	+0.94	+ 4	+ 1	+ 7	+ 1	+ 3	− 9
1897	+0.64	+ 7	− 4	−18	+11	−10	−13
1898	+1.24	0	+30	+ 4	+ 4	+ 1	+30
1899	−0.46	−10	− 9	−17	− 8	+ 7	− 2
1900	−0.41	+ 6	− 8	+12	+ 1	+15	− 5
1901	−0.91	− 1	−11	+ 1	− 5	+ 5	−10
1902	−2.36	− 5	− 9	−22	− 6	−20	−20
1903	−0.81	− 2	− 4	0	+ 8	+12	−29
1904	+0.69	+ 3	+ 9	+18	+ 7	+15	− 7
1905	−0.64	+ 5	− 4	−26	− 3	−23	+ 3
1906	−0.06	− 9	− 9	− 3	+ 1	− 7	+ 2
1907	+0.06	0	+ 3	+ 4	−15	− 3	+18
1908	+0.19	−10	− 6	+19	+ 4	+ 5	+ 2
1909	+0.64	+ 1	+ 6	+10	− 4	+ 1	+11
1910	−0.56	−12	−14	−11	−10	−17	− 3
Mean	.....	32	39	52	32	50	43

The probabilities of a sunshine deviation of the same sign in July and in August, and the coefficients of correlation are shown in Table 16.

TABLE 16.

Sign.	July.			August.		
	Nemuro.	Tokyo.	Niigata.	Nemuro.	Tokyo.	Niigata.
Same	13	15	13	13	14	11
Opposite	4	5	5	5	6	7
Intermediate	3	0	1	1	0	1
Number of cases	20	20	19	20	20	19
Probability	65	75	68	65	70	63
Correlation coefficient	0.37	0.58	0.47	0.41	0.42	0.47
Probable error	±0.13	±0.10	±0.12	±0.13	±0.12	±0.12

From Table 16 we see that on the east coast of northeastern Japan the correlation between the variation of the intensity of the action center in March and duration of bright sunshine is at least a suggestive one. The greater the barometric gradient at Zikawei for March the greater the duration of bright sunshine on our east coast in July and August. But on the west side of the central mountain range in northeastern Japan we could not find any correlation which is worthy of notice. This fact gives a hint for the physical interpretation of this correlation between temperature and barometric oscillations, which will be given in my Second Note.

ANNUAL HOURS OF FOG, 1885–1915.[1]

A compilation of approximate hours of fog or thick weather observed per year at 508 fog-signal stations throughout the [Lighthouse] Service during the period 1885 to 1915, inclusive, has been continued from the records of the Lighthouse Service, along the lines mentioned in the Bulletin for August, 1912. A summary of the principal results is given in Table 1, giving the results for the station in each district having the maximum number of hours of fog in a single year and the station having the highest annual average for the period.

TABLE 1.—*Hours of fog or thick weather, per year, at 508 stations, 1885—1915.*

District.	Number of stations[1]	Mean hours per year for district.[2]	Maximum observed.			Highest annual average.		
			Station.	Hrs.	Year.	Station.	Hrs.	Yrs.
1st	56	874	Seguin	2,734	1907	Petit Manan	1,691	31
2d	36	680	Great Round Shoal L. Vessel.	1,727	1907	Pollock Rip Slue L. Vessel.	1,175	14
3d	100	463	New London Harbor.	1,809	1885	Block Island S. E.	831	31
4th	12	363	Delaware Breakwater.	912	1887	Delaware Breakwater.	525	30
5th	85	218	Cape Henry	902	1904	Baltimore	426	7
6th	7	135	Martins Industry L. V.	320	1898	Brunswick L. V.	183	8
7th	1	112	Egmont Key	128	1913	Egmont Key	112	3
8th	16	281	Cubits Gap	819	1907	Cubits Gap	562	10
10th	15	228	Cleveland Breakwater.	1,224	1915	Buffalo Breakwater.	524	22
11th	47	310	Thunder Bay Island.	1,085	1909	Middle Island	541	11
12th	54	359	Calumet Harbor	2,269	1913	Calumet Harbor	1,196	9
16th	10	278	Scotch Cap	1,144	1915	Cape Hinchinbrook	555	5
17th	29	439	Swiftsure Bank L. V.	1,770	1912	Swiftsure Bank L. V.	1,203	9
18th	40	606	San Francisco L. V.	2,145	1915	Point Reyes	1,337	31

[1] No fog-signal stations in the 9th, 13th, 14th, 15th, and 19th districts. No regular station in the 7th district prior to 1913.
[2] Compiled from the station averages instead of from the annual district averages, as was the case in previous report.

The absolute maximum record at Seguin, Me., of 2,734 hours in 1907, equivalent to about 30 per cent of the entire year (8,760 hours) has not been exceeded. The highest annual average record remains at Petit Manan, Me., being 1,691 hours per year for 31 years, or over 19 per cent of the period. Out of 29 stations in the entire Service averaging over 1,000 hours of fog per year, 14 or practically half are in the first district.

An interesting maximum record is that observed at Calumet Harbor, near Chicago, Ill., in the twelfth district, where 2,269 hours of fog, or about 26 per cent of the year, occurred in 1913. This and other Lake stations are affected somewhat by smoke in the vicinity.

[1] *Reprinted from* Lighthouse Service Bulletin, December, 1915, No. 48, p. 194.

The former Pacific coast record at Point Reyes, Cal., 2,070 hours in 1887, was exceeded in 1915 by San Francisco Light Vessel, where 2,145 hours were observed, which was the highest figure at any station in the Service during the past year. The highest annual average for the Pacific coast, is, however, still maintained by Point Reyes, being 1,337 hours per year for 31 years, equivalent to about 15 per cent of the time.

While the records for 1915 indicate that fog was not unusually prevalent throughout the Service as a whole, there were 15 stations at each of which over 1,200 hours of fog or thick weather were observed, as follows:

TABLE 2.—*Stations having over 1,200 hours of fog or thick weather, 1915.*

District.	Station.	Hours.	Per cent of year.
18th	San Francisco Light Vessel	2,145	24
1st	Moose Peak	1,508	17
1st	Libby Islands	1,498	17
1st	Egg Rock	1,494	17
1st	Matinicus Rock	1,454	17
1st	The Cuckolds	1,464	17
1st	Whitehead	1,440	16
1st	Mount Desert	1,326	15
1st	Great Duck Island	1,297	15
1st	West Quoddy Head	1,288	15
12th	Milwaukee Pierhead	1,282	15
3d	Point Judith	1,265	14
2d	Pollock Rip Slue L. V	1,231	14
10th	Cleveland West Breakwater	1,224	14
2d	Vineyard Sound L. V	1,203	14

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THE PHYSICIAN AND THE WEATHER BUREAU.[1]

As far back as in the time of Hippocrates physicians recognized the part which climate plays in man's health and well-being, and to-day it is most desirable that the physician should know (1) where he can secure reliable, unprejudiced climatological information; (2) what elements of climate are recorded in a reliable manner.

Weather Bureau resources.

The U. S. Weather Bureau is officially charged with the collection of a large amount of weather data and the working over of this material into climatological statements. This material is furnished by observations of temperature, atmospheric pressure, vapor pressure, precipitation, wind direction and movement, and the duration of sunshine at about 200 regular stations, most of which also have self-recording instruments for making continuous records of some or all of these elements. The locations of these regular stations are shown by the small circles on the map of figure 1. Besides these regular stations the Weather Bureau maintains (March, 1915) 4,083 special stations served by cooperative observers who observe temperature, cloudiness and rainfall, and wind direction, or perhaps only temperature or rainfall. The number of such cooperative stations in each State is shown on figure 1 by the number placed at the center of each State.

[1] A paper with this title was published in the Journal of the American Medical Association, Chicago, Jan. 1, 1916, 66:6-11, by Ford A. Carpenter. It is here abstracted for the benefit of our readers.—C. A. Jr.

The regular stations telegraph their observations twice daily to the central office at Washington, and to selected map-issuing stations, and the combined simultaneous results appear once daily on the printed maps of the daily weather issued by those stations. These weather maps should be of great practical use to the physician in routing his patients according to the weather movements the maps show; and the local bureau office can tell him of average weather conditions, as well as of altitudes along railroad routes over which he considers sending patients.

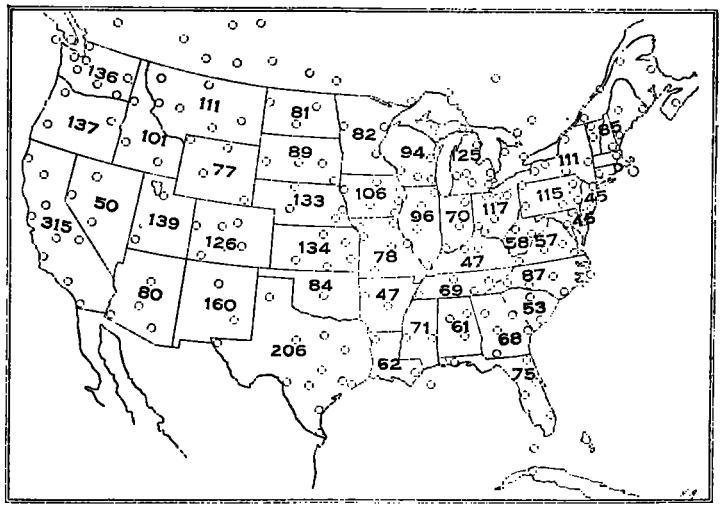

FIG. 1.—Distribution of Weather Bureau stations in the United States. Circles indicate positions of regular stations. Approximate number of cooperative stations in each State is shown by the respective figures.

Of less frequent publications the Weather Bureau issues a large number, practically all of which are at the service of the physician either in his home on request or at the local office of the Weather Bureau in his city. Every station of the service issues on the first of each month a condensed tabular summary of the preceding month's daily weather and this summary (W. B. Form 1030-metl.) is mailed regularly to those requesting it. Furthermore, every climatological section center issues monthly a collection of observations made in the section (State) during the month, a report that can usually be secured upon request. The bureau has also published many special bulletins dealing with the climatology of the United States in its relation to many phases of human activity. Bulletin Q, "Climatology of the United States," deserves special mention as the most comprehensive and thorough study of the climate of the United States; it is available at each of the Weather Bureau stations and is also found in many public libraries. Since 1873 the bureau has also published the MONTHLY WEATHER REVIEW, which now contains many special contributions as well as detailed monthly discussions and statistics of each month's weather. The Weather Bureau library of more than 32,000 titles in meteorology and climatology is also for public use.

In addition to placing available meteorologic records at the disposal of the applicant, the Weather Bureau officials throughout the country will be found prompt